WATER QUALITY

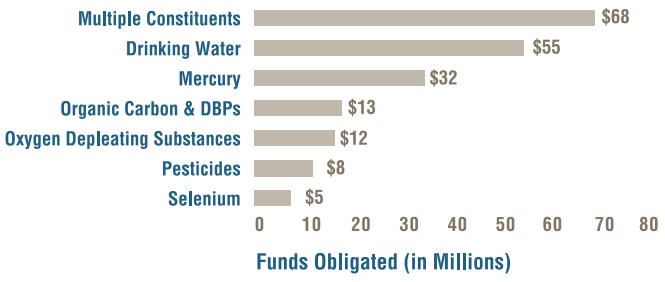
CALFED agencies and the Water Quality, Ecosystem Restoration and Watershed Management programs are investing in water quality projects to improve water quality for all beneficial uses, including drinking water, agricultural water, providing clean water for a diverse and healthy aquatic ecosystem, and supporting watershed stewardship. The Water Quality Program is investing in projects to improve water quality from source to tap to benefit the more than 22 million Californians whose drinking water supplies come from the Bay-Delta watershed. The Ecosystem Restoration Program is investing in research, monitoring and source control projects to reduce impacts to aquatic organisms from toxic chemicals and oxygen depletion, as well as ways to address chemicals that bioaccumulate in the food chain and may affect people and wildlife who consume fish. The Watershed Management Program improves water quality by providing financial and technical support for local groups to perform watershed activities that improve water quality and watershed stewardship.

Summary of Accomplishments

CALFED programs have invested more than $195 million in 227 projects to improve water quality for drinking water, ecosystems and to promote watershed management.

- More than $76 million invested in 60 projects to improve drinking water quality, including source improvement, regional water investigations and exchanges, conveyance improvements, treatment demonstrations and research across the state.
- More than $67 million invested in 55 projects to identify and reduce contaminants affecting aquatic life, and to develop and implement a strategy for reducing exposure to legacy pollutants such as mercury that can bioaccumulate and affect aquatic life, wildlife and humans who consume fish. CALFED agencies are working to improve the levels of dissolved oxygen in the Stockton Deep Water Ship Channel that currently impede the passage of salmon.
- More than $52 million invested in 112 projects that help provide overall improvement of water quality by promoting capacity building, planning and implementation of watershed stewardship throughout the Bay-Delta and its tributaries.

Breakdown of Expenditures by Constituent



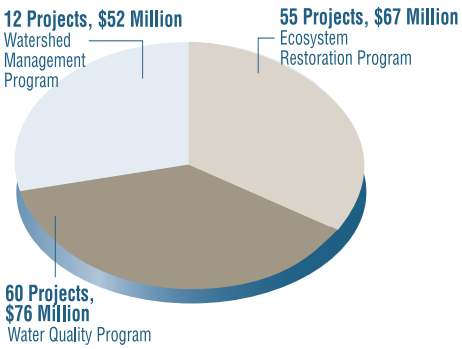
CALFED Plan

Record of Decision (ROD)

The CALFED Plan includes the following water quality goals:

- Enable users to capture higher quality Delta water for drinking water purposes.
- Reduce contaminants and salinity that impair Delta drinking water quality.
- Evaluate alternative approaches to drinking water treatment to address growing concerns over disinfection byproducts and salinity.
- Enable voluntary exchanges or purchases of high quality source waters for drinking water uses.
- Improve and/or maintain water and sediment quality conditions that fully support healthy and diverse aquatic ecosystems in the Bay-Delta estuary and watershed; and eliminate, to the extent possible, toxic impacts to aquatic organisms, wildlife, and human health.
- Improve dissolved oxygen conditions in the San Joaquin River near Stockton as part of ecosystem restoration efforts.

Funds Obligated for Projects that Support Water Quality by Program



Water Quality Accomplishments by Region

Multi-Region

- More than $26 million invested in 12 projects that affect more than one region, including four treatment demonstration projects, four research projects, the San Joaquin – Southern California Water Exchange project, and a broad public outreach project.
- More than $1 million invested in support of the development of a Central Valley Drinking Water Policy that is managed by a broad stakeholder work group.
- Contaminants workshop held to provide a forum for discussion on the current state of knowledge on contaminants and to develop recommendations for future priorities.
- The Mercury Strategy was finalized and adopted by the Authority. More than $30 million has been approved for projects to implement the strategy, including research on sources and cycling of mercury, evaluating ecological effects, water and tissue monitoring and public outreach and education.
- $6 million invested in seven projects to investigate sources of toxicity to aquatic life and to promote approaches that reduce toxic compounds entering the waterways. These efforts include public education to reduce urban pesticide usage and development and outreach of best management practices to reduce water quality impacts from agricultural pesticide use.
- More than $12 million invested in multi-regional dissolved oxygen projects to support studies to identify sources, causes and study solutions for control.

Sacramento Valley

- More than $10 million invested in 12 projects, including $595,000 to protect drinking water quality and watershed health on Steelhead Creek in Sacramento County, $250,000 to develop a Sacramento Regional Water Quality Management Plan, and other projects to develop and implement best management practices.
- $1.2 million provided to investigate sources of mercury in the Sacramento River watershed, including an inventory of abandoned mine sites.
- $4 million invested by the three programs to develop and evaluate practices to reduce organophosphate pesticide runoff and provide education to agricultural and urban users to improve water quality.
- 55 projects for $27 million funded for local groups to do watershed assessments and develop watershed plans, monitoring, and implement watershed restoration activities in the Sacramento River watershed.

Bay and Delta Regions

- More than $19 million invested in 21 projects including implementation of best management practices in the Delta and along the North Bay and South Bay Aqueducts, the development of a Delta regional drinking water quality management plan, and support for the development and construction of continuous monitoring stations at key Delta locations, including:
  - The Rock Slough and Old River Water Quality Improvement Projects that will complete construction in 2005.
  - Bay Area Water Quality/Water Supply Reliability Project that will be completed in 2005 with regional planning transitioning to a local stakeholder group.

WATER QUALITY

- Program established to monitor dissolved oxygen and other parameters in the Bay-Delta and San Joaquin River.
- $25 million invested in nine projects to evaluate how restoration actions may impact Delta water quality, including mercury and organic carbon.
- $4 million invested in research projects to determine sources and cycling of selenium in the estuary and evaluate impacts to aquatic life.
- $7 million invested in research projects to evaluate the effects of contaminants on key species of concern, including anadromous salmonids, delta smelt, Sacramento splittail and sturgeon.
- 34 projects supported with more than $16 million so that community organizations can do watershed assessments, citizen monitoring and carry out restoration activities on watersheds in the Bay and Delta regions.

San Joaquin Valley

- More than $33 million invested in 20 projects, including implementation of best management practices and other types of projects that contribute to reducing salinity in the San Joaquin River.
- A basin plan amendment for the control of salinity and boron in the lower San Joaquin River was completed by Central Valley Regional Water Quality Control Board, and a group of stakeholders have formed the San Joaquin River Water Quality Management Group to implement projects to meet the objectives.
- 23 projects funded for more than $9 million in the San Joaquin region for local groups to improve water quality and enhance watershed stewardship.
- $11 million provided to eight projects to address water quality issues in the San Joaquin region, including $2.7 million to address selenium and salinity from the Grasslands district and develop a real-time monitoring system and a pilot-scale treatment project.

Southern California

- More than $8 million invested in six projects, including the development of a Southern California regional drinking water quality management plan:
  - Water quality improvements in terminal Southern California reservoirs and in groundwater replenishment projects.
  - Desalination Research and Innovation Partnership (DRIP). The project already has resulted in development of advance reverse osmosis membranes.
- $3.7 million provided in funds for eight projects in Southern California to develop watershed management plans, perform monitoring and provide outreach and education.

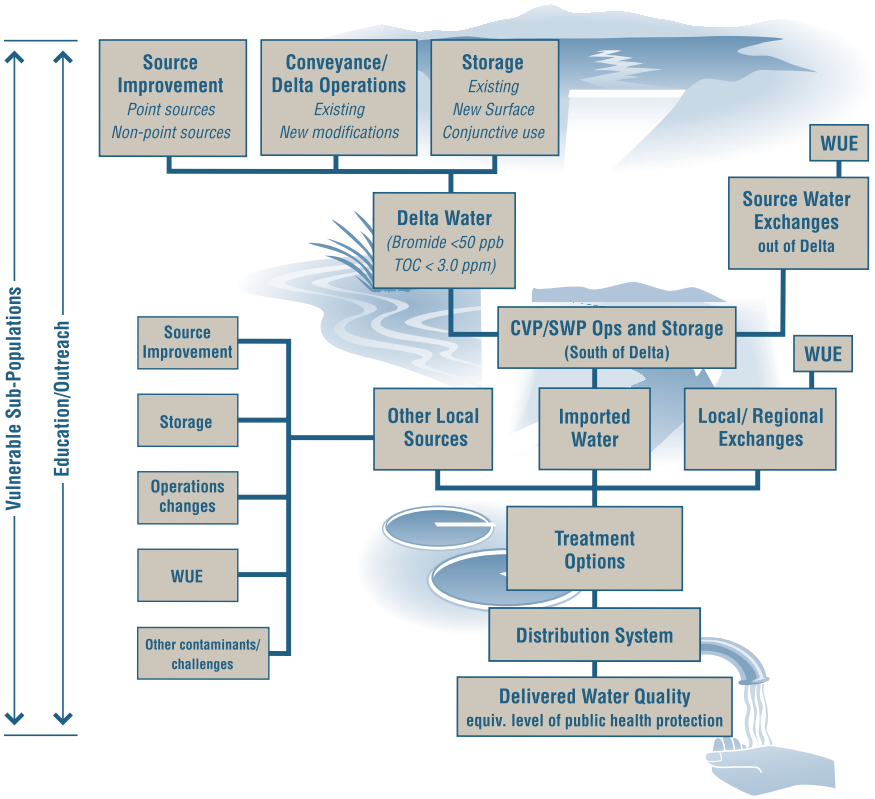
Rock Slough Headworks for the Contra Costa Canal

Cross-regional Benefits

The CALFED Program's regional approach emphasizes local involvement and strives to address local issues and needs. At the same time, many actions in specific regions directly benefit other regions and the state as a whole. These include:

- Supporting healthy ecosystems and anadromous fish populations through water quality improvements in Bay-Delta watersheds that in turn improve water supply reliability for cities and farms.
- Protecting water quality at the source allows for more reliable water treatment, ultimately better protecting and benefiting water customers.
- Protecting and improving water quality in the Delta benefits cities and farms in the Bay Area, San Joaquin Valley and Southern California that rely on Delta water exports.
- Improving regional cooperation on water quality improvements and regional exchanges can help relieve pressure on the Delta during droughts and other emergencies.

Equivalent Level of Public Health Protection (ELPH)



This conceptual diagram shows options and opportunities to improve water quality as it moves through the system from source to tap.

This year the Water Quality Program focused efforts on developing a strategic plan for the program, initiating regional ELPH planning efforts, and supporting the Central Valley Drinking Water Policy technical work that will develop conceptual models for high priority drinking water constituents in 2005 and 2006.

WATER QUALITY

PROJECT HIGHLIGHT

Central Valley Drinking Water Policy

A multi-year effort is currently under way to develop a drinking water policy for surface waters in the Central Valley. Current policies and plans lack water quality objectives for several known drinking water constituents of concern, such as disinfection by-product precursors and pathogens, and do not include implementation strategies to provide effective source water protection. The development of a comprehensive drinking water policy for the Delta and its upstream tributaries is a CALFED ROD milestone.

The Central Valley Regional Water Quality Control Board (CVRWQCB) is the lead agency for developing the drinking water policy that will be incorporated into the Basin Plans for the Sacramento and San Joaquin basins. The Central Valley Drinking Water Policy Work Group, consisting of stakeholders who could potentially be affected by the drinking water policy and state and federal agency representatives, is working with the CVRWQCB to obtain the technical information needed to develop a drinking water policy. The Bay-Delta Public Advisory Committee Drinking Water Subcommittee provides a forum for communicating with a larger stakeholder community.

A technical work plan was prepared to guide the efforts. Key tasks include water quality monitoring, pollutant load evaluations, and evaluation of potential control strategies to identify those that are reasonably attainable and cost effective. The first major accomplishment of this effort occurred in July 2004 when the CVRWQCB adopted a resolution reaffirming their commitment to and support of this work. The current focus is on the development of conceptual models for high priority drinking water constituents and the development of a water quality database.

The technical work is scheduled for completion in 2007. Policy development and adoption as a Basin Plan Amendment could occur by the middle of 2009. The CVRWQCB Basin Plan amendment process will include additional public outreach and review, and will provide further opportunity for stakeholder input.

PROJECT HIGHLIGHT

Low Dissolved Oxygen in the San Joaquin River

The Stockton Deep Water Ship Channel (DWSC) is a dredged portion of the San Joaquin River that begins at the mouth of the San Joaquin River near Antioch and ends near Stockton. The channel allows large ships access to the interior of the Central Valley from the open sea. The DWSC experiences regular periods of low dissolved oxygen (DO) concentrations and often violates water quality objectives. Low DO can significantly impact aquatic life and could be acting as a barrier to migrating fall-run Chinook salmon in the channel.

Since 1999, more than $12 million in grant funds have been provided for studies to identify sources and causes of the DO problem and to identify solutions for control. Findings indicate low DO in the DWSC is mainly caused by the altered river flow, the depth of the channel, and upstream inputs of algae and oxygen-depleting substances.

Solving the Problem

CALFED agencies support a phased approach for studies and actions to correct the dissolved oxygen problem. Studies are on-going to evaluate specific sources of oxygen-depleting substances to assist in the development of detailed load allocations. Other actions include feasibility and demonstration studies of both aeration and non-aeration measures. Non-aeration options include control of oxygen-depleting substances in and upstream of the DWSC and could include pilot projects for source control of algae and/or nutrients. Agencies and stakeholders are currently evaluating water management actions in the San Joaquin River and South Delta and their potential to improve or prevent further degradation of dissolved oxygen in the channel.

Aeration Demonstration Project

CALFED agencies have selected an experimental aeration project to demonstrate the response to the DWSC by adding oxygen to channel water. The selected pilot project uses the U-Tube system that delivers oxygen to water pumped through a device. By subjecting the oxygen bubbles to increased pressure, more oxygen can be dissolved into the water. This super-saturated oxygen rich water is then injected into the channel.

Benefits

CALFED agencies are working together to ensure studies and management actions are based on sound science and subject to peer review and integrated with and support the regulatory process. This aeration demonstration project should improve DO conditions in the channel over a two-year period.

WATER QUALITY

◆ Completed Milestone ▲ Remaining Milestone ●—● Present Schedule ◆—▶ Sub-Tasks ▭ Date Reporting Period Ends

Program Element Summary Tasks	2000	2001	2002	2003	2004	2005	2006	2007	2008
Source Improvement									
Central Valley Drinking Water Policy Delta and Delta Upstream Tributaries				3/03 ●—● 12/19		CVRWQCB - Complete Technical Work - 6/07 ▲ to Support Basin Plan Amendment			
							CVRWQCB - Establish and Begin Implementation - 12/09 ▲ of Drinking Water Policy		
San Joaquin Valley Agricultural Drainage			12/01 ●—● 12/14						
				◆ 12/02 - Initiate Regional Desalinization Demo Project					
					◆ 9/04 - Finalize State Basin Plan Amendment & Total Max Daily Load for Salinity in S.J. River				
Stockton Deep Water Ship Channel Dissolved Oxygen						▲ 1/05 - Begin Implementation of San Joaquin River Water Quality Management Plan			
						▲ 1/05 - Phased Basin Plan Amendment and Total Max Daily Load for Dissolved Oxygen			
						▲ 9/05 - Begin Aeration Demonstration Project			
									Finalize State Basin Amendment and TMDL- 6/09 ▲
South Delta Water Quality Standards		9/00 ●—● 8/02							
			▲ 8/02 - Develop & Implement Plan to Meet State Water Quality Standards						
North Bay Aqueduct			3/02 ●—● 12/03						
				◆ 12/02 - Implement Watershed Runoff Water Quality Best Management Practices					
					◆ 12/03 - Study Feasibility of Relocating North Bay Aqueduct Intake				
Old River and Slough Water Quality Improvement Projects (WQIP)			1/01 ●—● 12/07						
						▲ 3/05 - Complete all Environmental Docs			
						▲ 6/05 - Complete Construction			
Operational Improvements/ Recirculation			9/00 ●—● 12/06						
					◆ 8/04 - Initiate Pilot Studies				
						▲ 12/05 - Complete all Environmental Docs			
						▲ 1/06 - Implementating if Feasibillity			
Regional Projects									
Regional ELPH Plans					6/04 ●—● 6/07				
						Complete Regional ELPH Plans - 6/07 ▲ For Every Major Region			
Bay Area Water Quality and Supply Reliability Project				7/01 ●—● 9/06					
				◆ 11/02 - Complete Phase I					
						▲ 12/04 - Complete Phase II and Consideration by Water Agencies			
						▲ 5/05 - Transition to Bay-Area IRWMP			
San Joaquin Valley/Southern California Water Exchange					8/00 ●—● 3/09				
					◆ 6/03 - Complete Feasibility Studies				
						◆ 6/04 - Indentify Pilot Projects			
							▲ 3/05 - Decision on Implementing Pilot Projects		
							▲ 3/06 - Begin Implementation of Long-Term Program		
Treatment Technology				12/01 ●—● 1/14					
				▲ 12/02 -Initiate UV Disinfection Plant Demo Project					
						◆ 6/05 - Science Panel Evaluation of Need for Additional Demo Projects			
Mercury Management									
Initial Mercury Studies					'97 ●—● '03				
						'02 ●—● 6/04			
						Development of Mercury Strategy			
						◆ 6/04 - Adopted by the California Bay-Delta Authority			
									'03 ●—●
									Implementation of Strategy